# Teaching portfolio

## 1. Teaching CV: A list of teaching and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD). Please state the teaching method used (e.g. lecture, class teaching, exercises, supervision, examination, coexamination, distance teaching, internet-based teaching and evaluation of teaching). Please also indicate the language of instruction.

Regarding MSC group students supervision, I have extended the PBL models to the following projects

1.EPSH3-1035 Optimal Control and Solutions for AC Microgrids
2.PED3-940 An Energy Management Solution for Residential Microgrids
3.EE5-510 Fault Detection and Protection for Electrical Power Systems for Space Microgrids
4.EE5-511 Designing a Reliable Electrical Power System (EPS) for Space Microgrids
5.EN4-404 An Energy Management Systems for Residential Microgrid
6.EN4-401 Zero Energy Buildings
7.EN4-404 Research on the Control of Buck Converter Applied in PV Integrated Power System

In addition, in the last 10 years, I supervised and supervised 26 PhDs to completion at AAU, who are currently working in industry and high level universities.
Please refer to all the ongoing and completed PhD projects here
https://www.energy.aau.dk/research/research-groups/crom/research-and-projects#ongoing-phd-projects

Regarding academic fields and scope please refer to the following website.
https://www.energy.aau.dk/research/research-groups/crom/education

it is worth mentioning that our center for research on microgrids - CROM is dedicated to the sustainable development on multi-disciplinary energy frameworks, providing reliable and optimal cutting-edge solutions to AC and DC microgrids, shipboard, offshore and maritime applications, space electric power systems, IoT-based energy systems among others.

With more than 10 years of experience, CROM currently comprises world-class laboratories, having so far more than 100 members, including researchers, PhD students, and visiting scholars.

Regarding teaching methods, we have used face-face ones, virtual (during COIVD 19 pandemic situation), blended mode and massive online open courses (MOOCS) (see https://platform.europeanmoocs.eu/)

The examination are aligned to AAU rules and policies.
https://www.studyservice.aau.dk/rules#examination-rules

The language of instruction is English.

## 2. Study/programme administration and management: Experience in programme management and coordination. A list of study administration tasks, e.g. study board membership, chair of study board, semester or course coordinator, accreditation tasks, etc. Experience in planning teaching activities. Experience in programme development. Participating in committees and commissions etc. on education issues.

I have large experience in programme management and coordination especially with academic semester coordinators and study board chairs. in fact, my idea is to transform my phd courses to MOOCS for larger audience and to provide education access to energy transition countries worldwide.

## 3. Formal pedagogical training: A list of completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc. Written assessment from the course in university pedagogy for assistant professors. Participation in conferences on pedagogy and didactics. Please enclose any documentation of the above, such as course certificates, references, etc

I have the following formal pedagogic training:
- Basic Course in PBL for University Teachers, Aalborg University, Denmark.
- Professional Communication. Aalborg University, Aalborg, Denmark.
- Digital Technologies in University Pedagogy

- Introductory course on PBL in higher education
- AAU PLA workshop “Responsibilities, Roles, and Interfaces”.
- Course Cross-Cultural Collaboration and Cultural Intelligence (CQ), at Aalborg University.
* Bringing the Gap, science for the public, from Danida Fellowship Centre.

## 4. Other qualifications: Conference contributions and attendance, contributions to debates, scientific articles on pedagogical issues etc. Peer supervision, editorials, mentoring experience or other types of competence development activities.

Skriv dit svar her...

## 5. Pedagogical development and research: Development of new courses, teaching materials, teaching methods, examination types or other types of pedagogical development. Didactic and pedagogical research. Cooperation with external collaboration partners.

Development of new courses at PhD level

PhD/Industrial course on AC Microgrids2 ECTS
PhD/Industrial course on DC Microgrids2 ECTS
PhD/Industrial course on Energy Management Systems in Microgrids 3 ECTS
PhD/Industrial course on Power Quality and Synchronization Techniques in Microgrids3 ECTS
PhD/Industrial course on Maritime Microgrids2 ECTS
PhD course on advanced FPGA-Based Controllers for Power Electronics Applications3 ECTS

for all the above-mentioned courses, the following teaching materials has been developed:
- Laboratory handbooks
- Laboratory Safety instructions
- Online tests
- Small scale setups for teaching

## 6. References on your teaching skills from superiors or colleagues. Teaching evaluations and any teaching awards received.

All my courses have been evaluated positively from the study board and head of section.

## 7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogical development, plans for following up on student feedback/evaluations, etc. Personal reflections on your own pedagogical practice, including objectives, methods and implementation. This should include an analysis and a reasoned description of your pedagogical activities in relation to your pedagogical understanding and student learning. Thoughts on the teaching method at Aalborg University (which is largely based on group-organised project work and problem-based learning)

Philosophy on Teaching and Supervision

Having studied in different countries and cultures, my current teaching philosophy at AAU is taking shape from my own learning processes in these environments, some pedagogy courses I have attended, and my teaching and supervision experience at UPC and UAM.
In Colombia, the academic and educational system is ruled by a broad social and humanistic content that is based on the scientific and research development. This creates a very friendly environment and there is academic trust among students. This model however, falls when there is a lack of lab equipment and resources making it hardly applicable to solve real life problems.

This caused longer years spent in the university and of course, a delay on progress. This (in my opinion) means to steal years from students that could have been spent by acquiring work/industrial experiences and unfortunately, impacting our own society negatively. In addition to this, due to the lack of research background at that time, teachers’ responsibility was only to give lectures and evaluate exams, but I have to say that most of them were really good at teaching and playing an important role as facilitators. In fact, I learn a lot of pedagogical skills thanks to them.

Currently, we have a Colombian Institute for the Development of Science and Technology named Colciencias (please see http://www.colciencias.gov.co/ for details) which encourage researchers and academic scientists to generate and integrate knowledge to social, economic, cultural and territorial development for a more sustainable and well-being country.

On the other hand, the Technical University of Catalonia (UPC), Spain where I spent 6 years researching and working as a teacher assistant, I observed low level of interaction among students and a bit of laziness regarding teamwork based projects and they didn't have a purpose to learn, only to pass the course and graduate fast and "earn money" as soon as possible in a company (at that time, the economic crisis was far away of what we have now), but on the other hand, I noted the big difference in the number of High-Technology Lab. equipment (in comparison with Colombia at least).

Finally, at Aalborg University, where I currently work, is internationally recognized for its advanced and efficient learning model, PBL - the Aalborg model. It is problem-based, project- oriented model that gives the students a more independent learning which favors interdisciplinarity and direct participation through team works to solve real life problems. I have had the privilege to practice this learning model both in teaching and supervision of student groups.

Department of Energy Technology, Aalborg University, AAU
- Ph.D Courses on Microgrids, (2008, 2011 – Present), Aalborg University, AAU - Denmark
Since 2008, I was working as visiting researcher at the Department of Energy Technology at Aalborg University, I contributed to the development and improvement of Industrial/PhD Courses based on modeling, control and operation of Microgrids and the content has been continuously updated and extended to 5 independent courses (EMS for Microgrids, DC Microgrids, AC Microgrids , Power Quality on Microgrids, and Communications on Microgrids) running up to present of which I am actively involved as lecturer and coordinator. All the scientific and academic knowledge that I have received during my PhD provided me with some valuable feedbacks and critical assessment of my current research work. It had also provided good insights and support for the continuous improvement of my research methodologies and PBL teaching skills.

I have assessed my past experiences as a student and a lecturer carefully and I always strive to learn from them by avoiding the negative ones and implementing the positive ones. When teaching a Microgrid course, I decide on the learning goals beforehand and transfer to the students as clear as possible, especially in the laboratory.

Since I like teaching, I try to make the learning process also enjoyable. I allow the students to be more proactive and more attentive by making them think to provide new solutions and improvements to the field of study. I also spend some time preparing high quality, professional, clean and engaging presentation slides for my students so they can be prepared anytime in case they have to give a research presentation or even being ready for presenting a paper in an international conference.

When supervising, I facilitate the students' learning process by giving them a hand both in practical and experimental behaving as an academic coach through regular meetings and being available for questions and assistance.

## 8. Any other information or comments.

Type your answer here...